



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,207	01/29/2004	Walter Schwarzenbach	4717-11600	3337
28765	7590	09/20/2005		
WINSTON & STRAWN LLP 1700 K STREET, N.W. WASHINGTON, DC 20006			EXAMINER DUONG, KHANH B	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,207

Applicant(s)

SCHWARZENBACH ET AL.

Examiner

Khanh B. Duong

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-17 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/14/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the filing of the application on January 29, 2004.

Accordingly, claims 1-17 are pending.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in France on August 4, 2003. It is noted, however, that applicant has not filed a certified copy of the French application as required by 35 U.S.C. 119(b).

Specification

The disclosure is objected to because of the following informalities: page 5, line 22, "that" should be --than--; and page 8, line 25, "in homogeneity" should be combined as a single word --in homogeneity--.

Appropriate correction is required.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the steps as recited in Claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must

be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 11, 12 and 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohmi et al. (U.S. Patent No. 6,597,039).

Re claim 1, Ohmi et al. ("Ohmi") discloses in 6A-6C a method of detaching a layer 37 from a wafer 1, which comprises: creating an weakened zone ("separation area") 3 in a wafer 1 to define the layer 37 to be detached and a remainder portion 38 of the wafer 1, such that the weakened zone 3 includes a main region 31 and a localized super-weakened region 32 that is more weakened than the main region 31; and initiating detachment of the layer 37 from the remainder portion 38 at the super-weakened region 32 such that the detachment propagates from

the super-weakened region 32 through the main region 31 to detach the layer 37 from the remainder portion 38 [see col. 10, lines 18-38].

Re claim 2, Ohmi expressly discloses in FIG. 6A the detachment is initiated by applying a detachment force 111 to the weakened zone 3 that is sufficient to initiate detachment at the super-weakened region 32 but not at the main region 31.

Re claim 3, Ohmi expressly discloses in FIG. 6A the detachment force 111 is applied to both the super-weakened region 32 and the main region 31.

Re claim 4, Ohmi expressly discloses in FIG. 6A the detachment force is obtained by applying energy to the weakened zone 3 that is sufficient to initiate detachment at the super-weakened region 32 but not at the main region 31.

Re claims 5-8, Ohmi discloses the energy is applied by a thermal treatment (heating/annealing) or an external force at least to the weakened zone 3 of the wafer 1 [see col. 10, lines 21-26]. In addition, Ohmi expressly discloses in FIGs. 6A-6B detaching the entire layer 38 from the remainder portion 37 by applying a thermal treatment (heating) to the weakened zone 3 [see col. 10, lines 21-26]. Thus, in order for the entire layer 38 to be detached from the remainder portion 37 of the weakened zone 3, it must be inherent that the thermal treatment was being applied substantially evenly over substantially the entire weakened zone 3.

Re claim 11, Ohmi discloses in FIG. 1C the weakened zone 3 is created by implanting a dose of atomic species in the wafer [see col. 10, lines 4-11].

Re claim 12, Ohmi discloses the super-weakened region 32 is created by implanting an overdose of the atomic species compared to the dose of atomic species implanted in the main region 31 [see col. 10, lines 13-17].

Re claim 14, Ohmi discloses an initial dose of atomic species is applied to the weakened zone, and the overdose is applied to the super-weakened region after the application of the initial dose [see col. 10, lines 4-11].

Re claim 15, Ohmi discloses the weakened zone 3 is created by producing a porous layer in the wafer 1 [see col. 6, lines 24-35].

Re claim 16, Ohmi expressly discloses in FIGs. 1A-1C the weakened zone 3 extends through a crystalline layer of the wafer 1.

Re claim 17, Ohmi discloses the wafer 1 comprises a semiconductor material [see col. 6, lines 37-39].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi in view of Aspar et al. (U.S. 2003/0234075 A1).

Re claim 13, Ohmi fails to disclose the atomic species is applied in substantially a single operation to both the super-weakened and main regions.

Aspar et al. ("Aspar") suggests in FIG. 1C the atomic species is applied in substantially a single operation to both the super-weakened region 36 and main region 12. [see page 3, paragraph [0054]].

Since Ohmi and Aspar are from the same field of endeavor, the purpose disclosed by Aspar would have been recognized in the pertinent prior art of Ohmi.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method disclosed by Ohmi as suggested by Aspar because of the desirability to minimize process steps.

Allowable Subject Matter

Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following U.S. Patents discloses relevant teachings regarding semiconductor processes utilizing hydrogen ion delamination: Hanson '764, Aga '718 and Yoo '376.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Duong whose telephone number is (571) 272-1836. The examiner can normally be reached on 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KBD



AMIR ZARABIAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800